

IN THE CLAIMS:

Please amend the claims as follows:

Please amend Claims 29 and 33 to read as follows:

29. (Twice Amended) An isolated polynucleotide for diagnosing hereditary hemochromatosis comprising at least 8 consecutive bases and up to about 100 consecutive bases of the sequence shown in SEQ ID NOS:1 or 2, or the complement thereof, wherein said isolated polynucleotide includes at least one polymorphic site shown in Table 1.

33. (Twice Amended) An isolated polynucleotide for diagnosing hereditary hemochromatosis comprising at least 18 consecutive bases and up to about 100 consecutive bases of the sequence shown in SEQ ID NOS:1 or 2, or the complement thereof, wherein said isolated polynucleotide includes at least one polymorphic site shown in Table 1.

Please add new Claims 49-79:

49. (New) An isolated polynucleotide consisting of at least 8 consecutive bases and up to about 100 consecutive bases of the sequence shown in SEQ ID NOS:1 or 2, or the complement thereof, wherein said isolated polynucleotide includes at least one polymorphic site shown in Table 1.

50. (New) The isolated polynucleotide of Claim 49, wherein the polymorphic site is at base 61465 of SEQ ID NO:1.

51. (New) The isolated polynucleotide of Claim 49, wherein the polymorphic site is at base 35983 of SEQ ID NO:1.

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52. (New) A pair of isolated polynucleotides as in Claim 49.

53. (New) A kit comprising an isolated polynucleotide of Claim 49.

54. (New) A kit comprising at least one pair of isolated polynucleotides as in Claim
52.

74 Sub 127 55. (New) An isolated polynucleotide consisting of at least 18 consecutive bases and
up to about 100 consecutive bases of the sequence shown in SEQ ID NOS:1 or 2, or the
complement thereof, wherein said isolated polynucleotide includes at least one polymorphic
site shown in Table 1.

56. (New) The isolated polynucleotide of Claim 55, wherein the polymorphic site is
at base 61465 of SEQ ID NO:1.

57. (New) The isolated polynucleotide of Claim 55, wherein the polymorphic site is
at base 35983 of SEQ ID NO:1.

58. (New) A pair of isolated polynucleotides as in Claim 55.

59. (New) A kit comprising an isolated polynucleotide of Claim 55.

60. (New) A kit comprising at least one pair of isolated polynucleotides as in Claim
58.

Sub H3/ 61. (New) An isolated polynucleotide consisting of a fragment of at least about 100 consecutive bases and up to about 235 consecutive kilobases of the sequence shown in SEQ ID NOS:1 or 2, or the complement thereof, wherein said isolated polynucleotide includes at least one polymorphic site shown in Table 1.

62. (New) The isolated polynucleotide of Claim 61 which is cDNA.

74 63. (New) The isolated polynucleotide of Claim 61 which is RNA.

64. (New) The isolated polynucleotide of Claim 61 which is genomic DNA.

Sub H5/ 65. (New) An isolated polynucleotide consisting of a fragment of at least about 300 consecutive bases and up to about 235 consecutive kilobases of the sequence shown in SEQ ID NOS:1 or 2, or the complement thereof, wherein said isolated polynucleotide includes at least one polymorphic site shown in Table 1.

66. (New) The isolated polynucleotide of Claim 65 which is cDNA.

67. (New) The isolated polynucleotide of Claim 65 which is RNA.

68. (New) The isolated polynucleotide of Claim 65 which is genomic DNA.

69. (New) An isolated polynucleotide comprising at least 8 consecutive bases and up to about 100 consecutive bases of the sequence shown in SEQ ID NOS: 1 or 2, or the

complement thereof, wherein the identified polynucleotide includes at least one polymorphic site selected from the group consisting of polymorphic sites listed in the following table:

POLYMORPHIC SITE IN SEQ ID NO:1	POLYMORPHISM
841	T-C
2662-2663	TT DEL
3767	T-C
3829	C-G
4925-4928	TAAA DEL
5691	C-T
5839	T-C
6011	G-A
6047	C-G
6231	G-A
6643	ADEL
6698	T-C
7186	T-C
7273	G-A
7545-7558	TCACACCCGATTGG DEL (SEQ ID NO:17)
7672	G DEL
7933	T-C
8746	T-G
9115	G-A
9823	G-A
10027	G-A
10214	C-T
10828	A-G
10918	C-G
10955	A-G
11524	C-A
11674	A-G
11955	T-C
12173-12175	TTT DEL
13304	G-A
13455	G-A
14416-14417	A INS
14998	C-T
15564	T-C
15887	A-G
15904-15919	CCAAACTGATCTTGA DEL (SEQ ID NO:18)
16019	T DEL
16211	A-T
17461	A-G
19755	G-A
19949	C-T
20085	C-T
20366-20367	A INS
20463	C-A
20841	A-T

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POLYMORPHIC SEQUENCE IN SEQ ID NO:1	POLYMORPHISM
21059	A-T
21117	A-G
21837	A-C
22093	A-C
22186	C-A
23009	G-A
24140	T-A
26173	G-C
26667	C-A
26994	T-C
27838	G-T
27861	T DEL
28132	G-A
29100	G-A
29454-29457	TTTT DEL
29787	T-G
29825	A-C
30009	T-C
30177	A-G
30400	A-G
31059	T-A
31280	C-T
31749	C-T
32040	C-G
33017	T-G
33026	T DEL
34434	C-T
35179	A-C
35695	G-A
35702	G-A
35983	A-G
37411	A-G
38526	C-T
40431	C-A
42054-42055	TT DEL
43783-43784	TTTT INS
45120	C DEL
45567	A-C
46601	A-T
47255	C-G
47758	C-A
47994	G-C
48440	G-A
48650	T-G
48680	A-G
50240	C-T
50553	G-A
50586	G-T
51322	G-C
51747	A-G
52474	C-G
52733	C-A
52875	G-A
53707	G-A

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POLYMORPHIC SITE SEQ ID NO:1	POLYMORPHISM
54819	A-G
55913	T-C
56225	A-C
56510	T-C
56566	G-A
56618	A-T
57815	A-G
58011	T DEL
58247-58248	T INS
58926	C-G
59406	C-G
59422	G-C
60221-60222	A INS
60656-60657	CA DEL
61162	G-A
61465	G-A
61607	A DEL
61653	T-C
61794-61795	T INS
62061	G-C
62362	T-G
62732	C-G
63364	G-A
63430-63431	GT INS
63754	C-T
63785	A-C
63870-63871	A INS
64788	A-G
64962	G-A
65891	C-T
66675	G-G
67186-67187	ATTINS
67746-67747	TT INS
68259	T-C
68836	T-C
68976	C-G
72508	T-G
72688	C-G
75323-75324	T INS
75887	G-C
77519	T-C
77749	G-A
77908	T-C
78385	C-G
78592-78593	AG INS
80189	T-G
80279	T DEL
80989-80990	A INS
81193	T-C
81273	A DEL
82166	G-A
83847	T DEL
84161-84162	CA-GG
84533	A-G

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POLYMORPHIC SITE IN SEQ ID NO:1	POLYMORPHISM
84638	T-G
85526	T-G
85705	G-T
86984	T-C
87655	T-C
87713	A-C
87892	C-T
88192	T DEL
88528	A-G
89645	A-T
89728	A-G
90088	T-C
91193-91194	2209bp INS
91373	T-C
91433-91434	A INS
91747	G-A
93625	T DEL
95116-95117	T INS
96315	G-A
97981	A-G
98351	T DEL
99249	C-T
100094-1 00095	T INS
100647-100648	TTC INS
100951	C-T
101610	C-A
102589	C-T
103076-1 03077	TATATATATATATA INS (SEQ ID NO:19)
103747	T-C
105638	A-C
107024	C-T
107322	C-T
107858	C-G
109019	A DEL
109579	T DEL
110021	C-A
111251	C-A
111425	G-A
112644	T-A
113001	G-C
113130	C-T
114026	G-A
114250	A DEL
115217	C-G
117995	G-A
118874	A-G
119470	T-C
119646	G-T
120853	C-T
121582	G-A
123576	A-C
125581	C-T
125970	G-T

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POLYMORPHIC SITE IN SEQ ID NO:1	POLYMORPHISM
126197	A-G
126672	A DEL
126673	G-C
128220-128221	A INS
132569	C-T
133572	A-C
134064	T-G
136999	G-A
137784	C-T
138903	G-A
139159-139160	A INS
140359	G-A
140898	C-T
141313	C DEL
141343	T-C
142148	T-C
142178	C-A
142433-142434	ATAGA INS
143783	C-T
144090	C-T
144220-144221	A INS
144725	A-C
145732-145733	AAAAAAAAAAAAA INS (SEQ ID NO:20)
147016-147017	CC DEL
147021	G-T
147536	T-G
148936	T-A
149061	T-C
154341	A-T
154588	G-A
155464	G-A
158574	C-G
160007	C-T
164348	A-T
164499	C-G
166677-166678	AAAG INS
167389	G-A
168506-168507	AGGATGGTCT INS (SEQ ID NO:21)
168515	T-C
169413-169414	AA INS
170300-170301	TTGTTGTTGTTG INS (SEQ ID NO:22)
170491	G-A
173428	T-C
173642	G-A
173948	T-G
175330	T-C
175836	T-C
176200	G-C
176222	T-C
176524	A-T
176684	G-A

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POLYMORPHIC SITE IN SEQ ID NO:1	POLYMORPHISM
176815	T-C
177049	T-C
177065	G-T
178285	T-C
179144-179115	A INS
179260	C-G
179281	C-G
180023	G-C
180430	T-C
180773	T-C
180824	T-C
181097	C-T
181183	A-T
182351	C-T
183197	G-A
183623	A-T
183653	G-T
183657	T-G
183795-183796	A INS
184060	G-A
184993	G-A
185918	A-G
186036	T-C
186506-186507	TAAC INS
186561-186568	TATTATT DEL
186690	G DEL
186751	T-A
187221	A-G
187260	A-G
187444-187447	CTCT DEL
187831-187832	C INS
188638	G-A
188642	C-T
189246	T-C
190340	A-C
190354	A-G
190762	A-G
191260	G-T
193018-193019	AGAT INS
193147	T-G
193196-193197	C INS
193499	C-T
193738	C-G
193984-193985	ACACACAC INS
194064	C-G
194504	A DEL
194734	G-A
194890	A-C
195404	G-A
195693	A-T
196205	G-A
197424	C-T
197513	C-T
197670	G-A

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POLYMORPHIC SITE IN SEQ ID NO:1	POLYMORPHISM
198055	C-A
198401	C-T
198692	A-G
198780	T DEL
199030	T-G
199933	C-T
200027	G-A
200439	T-A
200452	A-G
200472-200483	AATAATAATAAT DEL (SEQ ID NO:24)
200559	A-T
200745	A-G
200919	T-A
201816	C-T
201861-201862	42bp INS
202662	T-C
202880	T-C
204341	C-T
204768	A-T
205284	T-G
207400	G-A
208634	T-C
208718	T DEL
208862	A-C
209419-209420	TT DEL
209802	G-A
209944	C-G
210299	A-G
211142	G-A
212072	G-A
212146	T-C
212379	G-A
212637-212639	TCTDEL
212696	T-C
213042	T-A
214192	A-G
214549	T-C
214795	C-T
214908	T-G
214977	A-G
215769	C-T
215947	C-A
216232	A-G
217478	G-A
219052	T-C
219082-219083	ATATATATATATATATAT INS
219314	C-A
219327	G-A
219560	C-T
219660	C-T
219889	G-A
220198	G-T

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POLYMORPHIC SITE IN SEQ ID NO:1	POLYMORPHISM
220384	G-A
220451-220452	CAAAAAA INS
221363	G-A
221645	G-A
222119	T-C
222358	A-G
222367	A-C
222686	A-G
222959	T-C
223270-223271	TT DEL
223283	T-C
224964	T-C
225232	A-C
225416	G-C
225486	T-C
226088	A-G
228421	A-G
230047	G-A
230109	G-C
230376	C-G
230394	A-C
231226	A-G
231447	G-A
231835	A-G
232400-232402	AAA DEL
232402-232403	G INS
232515	G-C
232703	GAT
232750	A-G

70. (New) The isolated polynucleotide of Claim 69, wherein the polymorphic site is at base 61465 of SEQ ID NO:1.

71. (New) The isolated polynucleotide of Claim 69, wherein the polymorphic site is at base 35983 of SEQ ID NO:1.

72. (New) A pair of isolated polynucleotides as in Claim 69.

73. (New) A kit comprising an isolated polynucleotide of Claim 69.

74. (New) A kit comprising at least one pair of isolated polynucleotides as in Claim 72.
75. (New) An isolated polynucleotide comprising at least 18 consecutive bases and up to about 100 consecutive bases of the sequence shown in SEQ ID NOS: 1 or 2, or the complement thereof, wherein said isolated polynucleotide includes at least one polymorphic site selected from the group consisting of polymorphic sites listed in the following table:

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POLYMORPHIC SITE IN SEQ ID NO:1	POLYMORPHISM
841	T-C
2662-2663	TT DEL
3767	T-C
3829	C-G
4925-4928	TAAA DEL
5691	C-T
5839	T-C
6011	G-A
6047	C-G
6231	G-A
6643	ADE
6698	T-C
7186	T-C
7273	GA
7545-7558	TCAACACACCGATTGG DEL (SEQ ID NO:17)
7672	G DEL
7933	T-C
8746	T-G
9115	G-A
9823	G-A
10027	G-A
10214	C-T
10828	A-G
10918	C-G
10955	A-G
11524	C-A
11674	A-G
11955	T-C
12173-12175	TTT DEL
13304	G-A
13455	G-A
14416-14417	A INS
14998	C-T
15564	T-C
15887	A-G
15904-15919	CCAAACTGATCTTTGA DEL (SEQ ID NO:18)

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POLYMORPHIC SITE IN SEQ ID NO:1	POLYMORPHISM
16019	T DEL
16211	A-T
17461	A-G
19755	G-A
19949	C-T
20085	C-T
20366-20367	A INS
20463	C-A
20841	A-T
21059	A-T
21117	A-G
21837	A-C
22293	A-C
22786	C-A
23009	G-A
24143	T-A
26175	G-C
26667	C-A
26994	T-C
27838	G-T
27861	T DEL
28132	G-A
29100	G-A
29454-29457	TTTT DEL
29787	T-G
29825	A-C
30009	T-C
30177	A-G
30400	A-G
31059	T-A
31280	C-T
31749	C-T
32040	C-G
33017	T-G
33026	T DEL
34434	C-T
35179	A-C
35695	G-A
35702	G-A
35983	A-G
37411	A-G
38526	C-T
40431	C-A
42054-42055	TT DEL
43783-43784	TTTT INS
45120	C DEL
45567	A-C
46601	A-T
47255	C-G
47758	C-A
47994	G-C
48440	G-A
48650	T-G
48680	A-G

POLYMORPHIC SITE IN SEQ ID NO:1	POLYMORPHISM
50240	C-T
50553	G-A
50586	G-T
51322	G-C
51747	A-G
52474	C-G
52733	C-A
52875	G-A
53307	G-A
54819	A-G
55918	T-C
56225	A-C
56510	T-C
56566	G-A
56618	A-T
57815	A-G
58011	T DEL
58247-58248	T INS
58926	C-G
59406	A-G
59422	G-C
60221-60222	A INS
60656-60657	CA DEL
61162	G-A
61465	G-A
61607	A DEL
61653	T-C
61794-61795	T INS
62061	G-C
62362	T-G
62732	C-G
63364	G-A
63430-63431	GT INS
63754	C-T
63785	A-C
63870-63871	A INS
64788	A-G
64962	G-A
65891	C-T
66675	G-C
67186-67187	ATT INS
67746-67747	TT INS
68259	T-C
68836	T-C
68976	C-G
72508	T-G
72688	C-G
75323-75324	T INS
75887	G-C
77519	T-C
77749	G-A
77908	T-C
78385	C-G
78592-78593	AG INS

POLYMORPHIC SITE IN SEQ ID NO:1	POLYMORPHISM
80189	T-G
80279	T DEL
80989-80990	A INS
81193	T-C
81273	A DEL
82166	G-A
83847	T DEL
84161-84162	CA-GG
84333	A-G
84638	T-G
85526	T-G
85705	G-T
86984	T-C
87655	T-C
87713	A-C
87892	C-T
88192	T DEL
88528	A-G
89645	A-T
89728	A-G
90088	T-C
91193-91194	2209bp INS
91373	T-C
91433-91434	A INS
91747	G-A
93625	T DEL
95116-95117	T INS
96315	G-A
97981	A-G
98351	T DEL
99249	C-T
100094-1 00095	T INS
100647-100648	TTC INS
100951	C-T
101610	C-G
102589	C-T
103076-1 03077	TATATATATATAA INS (SEQ ID NO:19)
103747	T-C
105638	A-C
107024	C-T
107322	C-T
107858	C-G
109019	A DEL
109579	T DEL
110021	C-A
111251	C-A
111425	G-A
112644	T-A
113001	G-C
113130	C-T
114026	G-A
114250	A DEL
115217	C-G

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POLYMORPHIC SITE IN SEQ ID NO:1	POLYMORPHISM
117995	G-A
118874	A-G
119470	T-C
119646	G-T
120853	C-T
121582	G-A
123576	A-C
125381	C-T
125970	G-T
126197	A-G
126672	A DEL
126672	G-C
128220-128221	A INS
132569	C-T
133572	A-C
134064	T-G
136999	G-A
137784	C-T
138903	G-A
1391 59.1 39160	A INS
140359	G-A
140898	C-T
141313	A DEL
141343	T-C
142148	T-C
142178	C-A
142433-1 42434	ATAGA INS
143783	C-T
144090	C-T
144220-144221	A INS
144725	A-C
145732-145733	AAAAAAAAAAAAA INS (SEQ ID NO:20)
147016-147017	CG DEL
147021	G-T
147536	T-G
148936	T-A
149061	T-C
154341	A-T
154588	G-A
155464	G-A
158574	C-G
160007	C-T
164348	A-T
164499	C-G
166677-166678	AAAG INS
167389	G-A
168506-168507	AGGATGGTCT INS (SEQ ID NO:21)
168515	T-C
169413-169414	AA INS
170300-170301	TTGTTGTTGTTG INS (SEQ ID NO:22)
170491	G-A

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POLYMORPHIC SITE IN SEQ ID NO:1	POLYMORPHISM
173428	T-C
173642	G-A
173948	T-G
175330	T-C
175836	T-C
176200	G-C
176222	T-C
176324	A-T
176684	G-A
176813	T-C
177049	T-C
177065	G-T
178285	T-C
179114-179115	A INS
179260	C-G
179281	C-G
180023	G-C
180430	T-C
180773	T-G
180824	T-C
181097	C-T
181183	A-T
182351	C-T
183197	G-A
183623	A-T
183653	G-T
183657	T-G
183795-183796	A INS
184060	G-A
184993	G-A
185918	A-G
186036	T-C
186506-186507	TAAC INS
186561-186568	TATTTATT DEL
186690	G DEL
186751	T-A
187221	A-G
187260	A-G
187444-187447	CTCT DEL
187831-187832	C INS
188638	G-A
188642	C-T
189246	T-C
190340	A-C
190354	A-G
190762	A-G
191260	G-T
193018-193019	AGAT INS
193147	T-G
193196-193197	C INS
193499	C-T
193738	C-G
193984-193985	ACACACAC INS
194064	C-G

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POLYMORPHIC SITE IN SEQ ID NO:1	POLYMORPHISM
194504	A DEL
194734	G-A
194890	A-C
195404	G-A
195693	A-T
196205	G-A
197424	C-T
197513	C-T
197670	G-A
198055	C-A
198401	C-T
198692	A-G
198780	T DEL
199030	T-G
199933	C-T
200027	G-A
200439	T-A
200452	A-G
200472-200483	AATAATAATAAT DEL (SEQ ID NO:24)
200559	A-T
200745	A-G
200919	T-A
201816	C-T
201861-201862	42bp INS
202662	T-C
202880	T-C
204341	C-T
204768	A-T
205284	T-G
207400	G-A
208634	T-C
208718	T DEL
208862	A-C
209419-209420	TT DEL
209802	G-A
209944	C-G
210299	A-G
211142	G-A
212072	G-A
212146	T-C
212379	G-A
212637-212639	TCTDEL
212696	T-C
213042	T-A
214192	A-G
214549	T-C
214795	C-T
214908	T-G
214977	A-G
215769	C-T
215947	C-A
216232	A-G
217478	G-A

POLYMORPHIC SITE IN SEQ ID NO:1	POLYMORPHISM
219052	T-C
219082-219083	ATATATATATATATATAT INS
219314	C-A
219327	G-A
219560	C-T
219660	C-T
219889	G-A
220198	G-T
220384	G-A
220451-220452	CAAAAA INS
221863	G-A
221845	G-A
222119	T-C
222358	A-G
222367	A-C
222686	A-G
222959	T-C
223270-223271	TT DEL
223283	T-C
224964	T-C
225232	A-C
225416	G-C
225486	T-C
226088	A-G
228421	A-G
230047	G-A
230109	G-C
230376	C-G
230394	A-G
231226	A-G
231447	G-A
231835	A-G
232400-232402	AAA DEL
232402-232403	G INS
232515	G-C
232703	G-T
232750	A-G

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76. (New) The isolated polynucleotide of Claim 75, wherein the polymorphic site is at base 61465 of SEQ ID NO:1.

77. (New) The isolated polynucleotide of Claim 75, wherein the polymorphic site is at base 35983 of SEQ ID NO:1.

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78. (New) A pair of isolated polynucleotides as in Claim 75.

79. (New) A kit comprising an isolated polynucleotide of Claim 75.

A clean copy of the claims as herein amended is presented as Exhibit A.